

1/17

1 GAATTGGCGCGCTCCGTGGTGGTCCATC ATG GTG TCT TTT TGA AGAGGACCTGAGCCTTTACCCCAAATATA 74
 1 M V S F * 5
 75 TCAAAAAACCCGGCAACCGCCCAAAAAAATTGCAAAAGCCTCTCGTAGGCACAAAGACCTATTCTAGCCATCAACTTT 154
 155 GTATCCGACGCTGCCGTTTAGCTGCCGCTCTTGAAGTCAAGC ATG GCG ACT ACT GAG TCC TCG GCC CCG 223
 1 M A T T E S S A P 9
 224 GCG GCC ACC ACC CAG CCG GCC AGC ACC CCG CTG GCG AAC TCG TCG CTG TAC GTC GGT GAC 283
 10 A A T T Q P A S T P L A N S S L Y V G D 29
 284 CTG GAG AAG GAT GTC ACC GAG GCC CAG CTG TTC GAG CTC TTC TCC TCG GTT GGC CCT GTG 343
 30 L E K D V T E A Q L F E L F S S V G P V 49
 344 GCC TCC ATT CGC GTG TGC CGC GAT GCC GTC ACC CGC CGC TCG GGC TAC GGC TAC GTC 403
 50 A S I R V C R D A V T R R S L G Y A Y V 69
 404 AAC TAC AAC AGC GCT CTG GAC CCC CAG GCT GCT GAC CGC GCC ATG GAG ACC CTG AAC TAC 463
 70 N Y N S A L D P Q A A D R A M E T L N Y 89
 464 CAT GTC GTG AAC GGC AAG CCT ATG CGC ATC ATG TGG TCG CAC CGC GAC CCT TCG GCC CGC 523
 90 H V V N G K P M R I M W S H R D P S A R 109
 524 AAG TCG GGC GTC GGC AAC ATC TTC ATC AAG AAC CTG GAC AAG ACC ATC GAC GCC AAG GCC 583
 110 K S G V G N I F I K N L D K T I D A K A 129
 584 CTG CAC GAC ACC TTC TCG GCC TTC GGC AAG ATT CTG TCC TGC AAG GTT GCC ACT GAC GCC 643
 130 L H D T F S A F G K I L S C K V A T D A 149
 644 AAC GGC GTG TCG AAG GGC TAC GGC TTC GAG GAC CAG GCC GCT GCC GAT CGC 703
 150 N G V S K G Y G F V H F E D Q A A D R 169
 704 GCC ATT CAG ACC GTC AAC CAG AAG AAG ATT GAG GGC AAG ATC GTG TAC GTG GCC CCC TTC 763
 170 A I Q T V N Q K K I E G K I V Y V A P F 189

FIG. 1A

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764 CAG AAG CGC GCT GAC CGC CCC AGG GCA AGG ACG TTG TAC ACC AAC GTG TTC GTC AAG AAC 823
 190 Q K R A D A R P R A R T L Y T N V F V K N 209
 824 TTG CCG GCC GAC ATC GGC GAC GAG CTG GGC AAG ATG GCC ACC GAG CAC GGC GAG ATC 883
 210 L P A D I G D D E L G K M A T E H G E I 229
 884 ACC AGC GCG GTG GTC ATG AAG GAC GAC AAG GGC GGC AGC AAG GGC TTC GGC TTC ATC AAC 943
 230 T S A V V M K D D K G G S K G F G F I N 249
 944 TTC AAG GAC GCC GAG TCG GCG GCC AAG TGC GTG GAG TAC CTG AAC GAG CGC GAG ATG AGC 1003
 250 F K D A E S A A K C V E Y L N E R E M S 269
 1004 GGC AAG ACC CTG TAC GCC GGC CGC CAG AAG AAG ACC GAG CGC GAG GCG ATG CTG CGC 1063
 270 G K T L Y A G R A Q K K T E R E A M L R 289
 1064 CAG AAG GCC GAG AGC AAG CAG GAG CGT TAC CTG AAG TAC CAG AGC ATG AAC CTG TAC 1123
 290 Q K A E E S K Q E R Y L K Y Q S M N L Y 309
 1124 GTC AAG AAC CTG TCC GAC GAG GTC GAC GAC GGC CGC CTG CGT GAG CTG TTC GCC AAC 1183
 310 V K N L S D E E V D D A L R E L F A N 329
 1184 TCT GGC ACC ATC ACC TCG TGC AAG GTC ATG AAG GAC GGC AGC GGC AAG TCC AAG GGC TTC 1243
 330 S G T I T S C K V M K D G S G K S K G F 349
 1244 GGC TTC GTG TGC TTC ACC AGC CAC GAC GAG GCC ACC CGG CCG CCC GTG ACC GAG ATG AAC 1303
 350 G F V C F T S H D E A T R P P V T E M N 369
 1304 GGC AAG ATG GTC AAG GGC AAG CCC CTG TAC GTG GCC CTG GCG CAG CGC AAG GAC GTG CGC 1363
 370 G K M V K G K P L Y V A L A Q R K D V R 389
 1364 CGT GCC ACC CAG CTG GAG GCC AAC ATG CAG GCG CGC ATG GGC ATG GGC ATG AGC CGC 1423
 390 R A T Q L E A N M Q A R M G M G A M S R 409

FIG. 1B

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1424 CCG CCG AAC CCG ATG GCC GGC ATG AGC CCC TAC CCC GGC GCC ATG CCG TTC TTC GCT CCC 1483
 410 P P N P M A G M S P Y P P G A M P F F A P 429

 1484 GGC CCC GGC GGC ATG GCT GCT GGC CCG CGC GCT CCG GGC ATG ATG TAC CCG CCC ATG ATG 1543
 430 G P G G M A A G P R A P G M M Y P P M M 449

 1544 CCG CCG GGC ATG CCT GGC CCC GGC CGC GGC CCC ATG ATG CCG CCC CAG 1603
 450 P P R G M P G P G R G P R G P M M P P Q 469

 1604 ATG ATG GGT GGC CCC ATG ATG GGC CCG CCC ATG GGC CGC GGC CGT GGC GGC CGC 1663
 470 M M G G P M M G P P M G P G R G R G G R 489

 1664 GGC CCC TCC GGC CGC GGC CAG GGC CGC GGC AAC AAC GGC CCT GGC CAG CAG CCC AAG CCC 1723
 490 G P S G R G Q G R G N A P A Q Q P K P 509

 1724 GCC GCT GAG CCG GCC GGC CCC GGC CCC GGC GGC GGC GGC GGC GGC GGC GGC 1783
 510 A A E P A A A P A A A A A A A A A P A A 529

 1784 GCG GCG GAG CCG GAG GCC CCC GGC CAG CAG CCG CTG ACC GCC TCC GCG CTG GCC GCC 1843
 530 A A E P E A P A A Q Q P L T A S A L A A 549

 1844 GCC CCG GAG CAG AAG ATG ATG GGC GAG CCG CTG TAC CCG CAG GTG GCG GAG 1903
 550 A A P E Q Q K M I G E R L Y P Q V A E 569

 1904 CTG CAG CCC GAC CTG GCT GGC AAG ATC ACC GGC ATG CTG CTG GAG ATG GAC AAC GCC GAG 1963
 570 L Q P D L L A G K I T G M L L E M D N A E 589

 1964 CTT CTG ATG CTT CTG GAG TCG CAC GAG GCG CTG GTG TCC AAG GTG GAG GCC ATC GCT 2023
 590 L L M L L E S H E A L V S K V D E A I A 609

 2024 GTG CTC AAG CAG CAC AAC GTG ATT GCC GAG AAC AAG GCT TAA AGCGCTGCACGCTGTGCG 2088
 610 V L K Q H N V I A E N K A * 624

FIG. 1C

FIG. 1D

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MNRWNLLALTGLLLVAAPFTKHQFAHASDEYEDDEDDAPAAP
KDDDDVTVTVTKNWDENVKSKFALVEFYAPWCGCHCKTLKPEYAKAATAALKAAAPDA
LIAKVDAQTESLAQFGVQGYPTLKWFDVGELASDYNRPDADGIVGWVKKKTGPPA
VTVEDADKLSLEADAEEVVVGYFKALEGEIYDTFKSYAAKTEDVVFVQTTSADVAKA
AGLDAVDTVSVVKNFAGEDRATAVLAATDIDTDSLTAFAVKSEKMPPTIEFNQKNSDKIF
NSGINKQLILWTADDLKADAEIMTVFREASKFKGQLVFVTVNNEGDGADPVTNFFG
LKGATSPVLLGFFMEKNKKFRMEGEFTADNVAKFAESVVDGTAQAVLKSEAIPEDPYE
DGVYKIVGKTVESVVLDETKDVLLEVYAPWCGCHKKLEPIYKKLAKRFFKVDSVIIAK
MDGTENEHPEIEVKGFTILFYFAGSDRTPIVFEGGDRSLKSLTKFIKTNAKIPYELP
KKGSDGDEGTSDDKDKPASDKDEL

1 gagtacgttt acgccatgaa ccggttggaac cttcttgccc ttacctggg gctgctgctg
61 gtggcagcgc ccttcaccaa gcaccagttt gctcatgctt ccgatgagta tgaggacgac
121 gaggaggacg atgccccgcg cgccttaag gacgacgacg tcgacgttac tgggtgacc
181 gtcaagaact gggatgagac cgtcaagaag tccaagttcg cgcttgaggga gttctacgct
241 ccttggtgcg gccactgcaa gacctcaag cctgagtagc ctaaggctgc caccgccctg
301 aaggctgctg ctcccgatgc cctatcgcc aaggtcgacg ccaccaggga ggagtccctg
361 gcccagaagt tcggcgtgca gggtacccc accctcaagt ggctcgaggctg
421 gcttctgact acaacggccc ccgcgacgct gatggcatgg ttggctgggt gaagaaagaag
481 actggcccc ccgcggtgac cgttgaggac gccgacaagc tgaagtccct ggaggcggac
541 gctgaggctg ttgtcgtcgg ctacttcaag gccctggagg gcgagatcta cgacaccttc
601 aagtcctacg ccgccaagac cgaggacgtg gtgttcgtgc agaccaccag cgccgacgtc

FIG. 2A

661 gccaaaggccg ccggcctggg cgcgtgggac accgtgtccg tggtaagaa cttcgccgggt
 721 gaggaccgcb ccaccgctgt cctggccacg gacatcgaca ctgactccct gaccgcgttc
 781 gtcaagtcbg agaagatgcc cccaccatt gagttcaacc agaagaactc tgacaagatc
 841 ttcaacagcg gcatacaaa gcagctgatt ctgtggacca ccgccgacga cctgaaggcc
 901 gacgccgaga tcatgactgt gtcccgcgag gccagcaaga agttcaaggg ccagctggtg
 961 ttcgtgaccg tcaacaacga ggccgacggc gccgaccccg tcaccaactt cttcgccctc
 1021 aaggcgccca cctgcctgt gtctgtgggc ttcttcattg agaagaacaa gaagtccgc
 1081 atggaggcg agttcacggc tgacaacgtg gctaagtccg ccgagagcgt ggtggacggc
 1141 accgcgcagg cgtgtctaa gtcggaggcc atccccgag acccctatga ggtatggcgtc
 1201 tacaagattg tgggcaagac cgtggagtct gtggttctgg acgagaccaa ggacgtgtg
 1261 ctggagggtg acgccccctg gtgcggccac tgcaagaagc tggagcccat ctacaagaag
 1321 ctggccaagc gctttaagaa ggtggattcc gtcatcatcg ccaagatgga tggcactgag
 1381 aacgagcacc ccgagatcga ggtcaagggc ttccctacca tctgttcta tcccgccggc
 1441 agcaccgca ccccatcgt gttcgagggc ggcgaccgct cgtcaagtc cctgaccaag
 1501 ttcatcaaga ccaacgcaa gatccgtac gagctgcca agaagggtc cgacggcgac
 1561 gagggcacct cggacgacaa ggacaagccc ggtccgaca aggacgagct gtaagcggct
 1621 atctgaacta cccaggtt ttggagctctg ggagctgcgc cttgcgcgt tgcgcttgca cactgtgcat
 1681 ggtatgggagt taaggaggag acggagcacg gaggctgcgc tgggttggtg gcttggagca
 1741 ccggcagcgc gtgatacgtc ctggcagcag caacggcgga gcggcgccat attggcgcgga
 1801 gctggcggc gcgtgttgct ggagaggata tgcctgcggg tgcctgcggg ccgtaggggc
 1861 agagatgaga gcgttacggg ctggcatgcg ggcgcccgctg cctctccctg cgtgcagtc
 1921 cttgctagga gacgcacggt ttggcacaag agggacgctg tccacagccc tgcgactgga
 1981 agttttttag gccctgcggt ggtagtggtg ttgggtacggt tgtgtgcata agatgaacaa
 2041 cgtttctctc aagacgagac tactagtatg ctgacgggtg gtgtatgtgg tggatggatt
 2101 gtgccccgac catgaagagt gctgtgttgc ctcgcgctt cgtcgccct ggatgtgcgt
 2161 ggttcggaac gctggagtca tctgttgagg agcgagggtg ttgtcggtc cgcccgccac
 2221 ggccgcgtga tgtccggatg gggtatgcga gcgaggggcaa ccgcagcgca gatagcggc
 2281 cagcggatcg agctagcga ggatgatgag agccggggct tgcggcgctg ggatcaggga
 2341 ggagccaagg cggagtgcac gcgaggaaaa cagtgtcggg caaagaacgg gctgcaagaa
 2401 cgccctgcgc aaa

FIG. 2B



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CTT CTT TAC GGT AAC AAC ATC ATT ACA GGT GCT GTA ATC CCA ACT TCT AAC GCA ATC GGT
 Leu Leu Tyr Gly Asn Asn Ile Ile Thr Gly Ala Val Ile Pro Thr Ser Asn Ala Ile Gly 90
 Ser Ile
 .250
 CTT CAC TTC TAC CCA ATT TGG GAA GCT GCT TCT CTA GAC GAG TGG TTA TAC AAC GGT GGT
 Leu His Phe Tyr Pro Ile Trp Glu Ala Ala Ser Leu Asp Glu Trp Leu Try Asn Gly Gly 110
 Val
 .300
 CCT TAC CAA CTT ATC GTT TGT CAC TTC CTT CTA GGT GTA TAC TGC TAC ATG GGT [CGT GAG
 Pro Tyr Gln Leu Ile Val Cys His Phe Leu Leu Gly Val Tyr Cys Tyr Met Gly] Arg Glu 130
 Glu Leu
 .350
 TGG GAA TTA TCT TTC CGT TTA GGT ATG CGT CCA TGG ATC GCT GTA GCT TAC TCA GCT CCA
 Trp Glu Leu Ser Phe Arg Leu Gly Met Arg Pro Trp Ile Ala Val Ala Tyr Ser Ala Pro 150
 Glu
 .400
 GTA GCT GCA GCT TCA GCT GTA TTC TTA GTT TAC CCT ATC GGC CAA GGT TCA TTC TCT GAC
 Val Ala Ala Ala Ser Ala Val Phe Leu Val Tyr Pro Ile Gly Gln Gly Ser Phe Ser Asp 170
 Thr Ile
 .500
 GGT ATG CCT TTA GGT [ATC TCT GGT ACT TTC AAC TTC ATG ATC GTA TTC CAA GCA GAA CAC
 Gly Met Pro Leu Gly] Ile Ser Gly Thr Phe Asn Phe Met Ile Val Phe Gln Ala Glu His 190
 Thr Ile
 .550
 AAC ATC CTT ATG CAC CCA TTC CAC ATG TTA GGT GGT GGT GGT GGT GGT TCA TTA
 Asn Ile Leu Met His Pro Phe His Met Leu Gly Val Ala Gly Val Phe Gly Gly Ser Leu 210
 Thr Ile
 .600
 TTC TCA GCT ATG CAC GGT TCT TTA GTT ACT TCA TCT TTA ATC CGT GAA ACA ACT GAA AAC
 Phe Ser Ala Met His Gly Ser Leu Val Thr Ser Ser Leu Ile Arg Glu Thr Thr Glu Asn 230
 Thr Ile
 .850

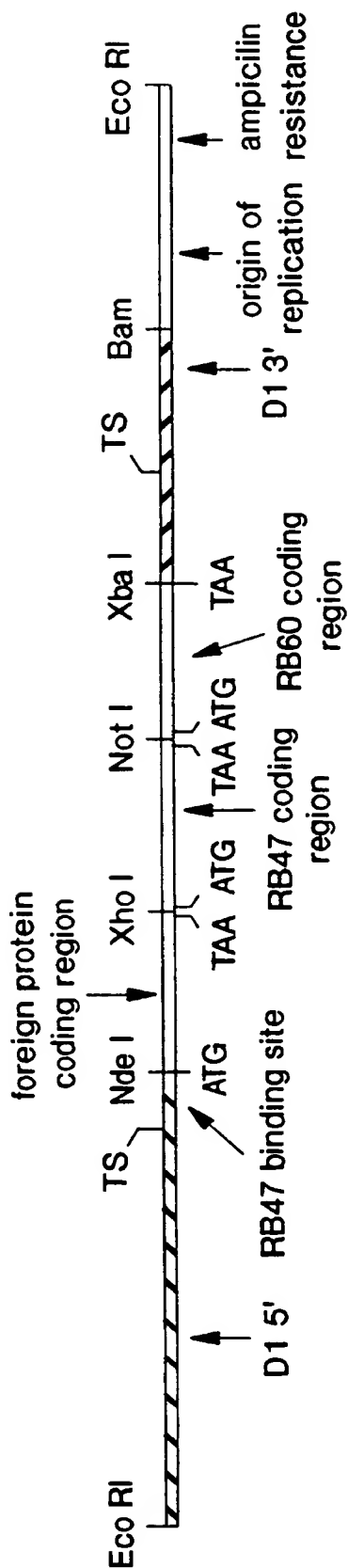
FIG. 3B

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.700
 GAA TCA GCT AAC GAA GGT TAC CGT TTC GGT CAA GAA GAA ACT TAC AAC ATT GTA GCT
 Glu Ser Ala Asn Glu Gly Tyr Arg Phe Gly Gln Glu Glu Thr Tyr Asn Ile Val Ala 250
 .750
 GCT CAT GGT TAC TTT GGT CGT CTA ATC TTC CAA TAC GGT TCT TTC AAC AAC TCT CGT TCA
 Ala His Gly Tyr Phe Gly Arg Leu Ile Phe Gln Tyr Ala Ser Phe Asn Asn Ser Arg Ser 270
 .800
 TTA CAC TTC TTC GCT GCT TTA GGT TGG CCG GTA ATC GGT ATT TGG TTC ACT GCT TTA GGT TTA
 Leu His Phe Phe Leu Ala Ala Trp Pro Val Ile Gly Ile Trp Phe Thr Ala Leu Gly Leu 290
 Val
 .850
 TCA ACT ATG GCA TTC AAC TTA AAC GGT TTC AAC TTC AAC CAA TCA GTA GAC TCA CAA
 Ser Thr Met Ala Phe Asn Leu Asn Gly Phe Asn Phe Asn Gln Ser Val Val Asp Ser Gln 310
 .900
 GGT CGT GTA CTA AAC ACT TGG GCA GAC ATC AAC CGT GCT AAC TTA GGT ATG GAA GTA
 Gly Arg Val Leu Asn Thr Trp Ala Asp Ile Ile Asn Arg Ala Asn Leu Gly Met Glu Val 330
 Ile
 .950
 ATG CAC GAG CGT AAC GCT CAC AAC TTC CCT CTA GAC TTA GCT TCA ACT AAC TCT AGC TCA
 Met His Glu Arg Asn Ala His Asn Phe Pro Leu Asp Leu Ala Ser Thr Asn Ser Ser 350
 .1000
 AAC AAC TAA TTT TTTTAACTAAATAAATACTGTGTTAACCATACCTAGTTTATTTTAGTTTATACACACTTTT
 Asn Asn *Oc
 Thr Gly *Oc
 .1050
 CATATATATATACTTAATAGCTACCATAGGCAGTTGGCAGGACGTCCC
 .1100
 Ala Ile Glu Ala Pro
 .1150
 S1

FIG. 3C

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TS = transcription start and transcription stop

FIG. 4

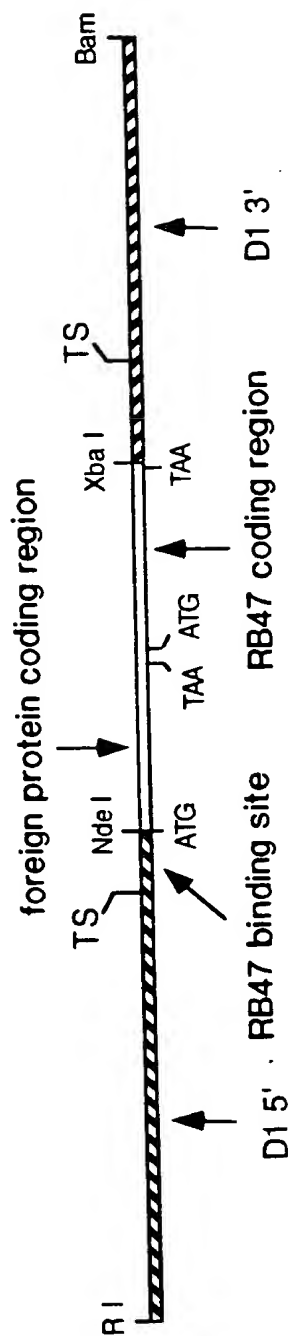
FIG. 5A

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661 ACG TTG TAC ACC AAC GTG TTC GTC AAC AAC TTG CCG GCC GAC ATC GGC GAC GAC GAG CTG 720
 221 T L Y T N V F V K N L P A D I G D D E L 240
 721 GGC AAG ATG GCC ACC GAG CAC GGC GAG ATC ACC AGC GCG GTG GTC ATG AAG GAC GAC AAG 780
 241 G K M A T E H G E I T S A V V M K D D K 260
 781 GGC GGC AGC AAG GGC TTC GGC TTC ATC AAC TTC AAG GAC GCC GAG TCG GCG GCC AAG TGC 840
 261 G G S K G F G F I N F K D A E S A A K C 280
 841 GTG GAG TAC CTG AAC GAG CGC GAG ATG AGC GGC AAG ACC CTG TAC GCC GGC CGC GCC CAG 900
 281 V E Y L N E R E M S G K T L Y A G R A Q 300
 901 AAG AAG ACC GAG CGC GAG GCG ATG CTG CGC CAG AAG GCC GAG AGC AAG CAG GAG CGT 960
 301 K K T E R E A M L R Q K A E E S K Q E R 320
 961 TAC CTG AAG TAC CAG AGC ATG AAC CTG TAC GTC AAG AAC CTG TCC GAC GAG GAG GTC GAC 1020
 321 Y L K Y Q S M N L Y V K N L S D E E V D 340
 1021 GAC GAC GCC CTG CGT GAG CTG TTC GCC AAC TCT GGC ACC ATC ACC TCG TGC AAG GTC ATG 1080
 341 D A L R E L F A N S G T I T S C K V M 360
 1081 AAG GAC GGC AGC GGC AAG TCC AAG GGC TTC GGC TTC GTG TGC TCC ACC AGC CAC GAC GAG 1140
 361 K D G S G K S K G F G F V C F T S H D E 380
 1141 GCC ACC CCG CCG CCC GTG ACC GAG ATG AAC GGC AAG ATG GTC AAG GGC AAG CCC CTG TAC 1200
 381 A T R P P V T E M N G K M V K G K P L Y 400
 1201 GTG GCC CTG GCG CAG CGC AAG GAC GTG CGC CGT GCC ACC CAG CTG GAG GCC AAC ATG CAG 1260
 401 V A L A Q R K D V R R A T Q L E A N M Q 420
 1261 GCG CGC ATG TAA GGATCC
 421 A R M * 1278
 424

FIG. 5B

RECTIFIED SHEET (RULE 91)



TS = transcription start and transcription stop

FIG. 6

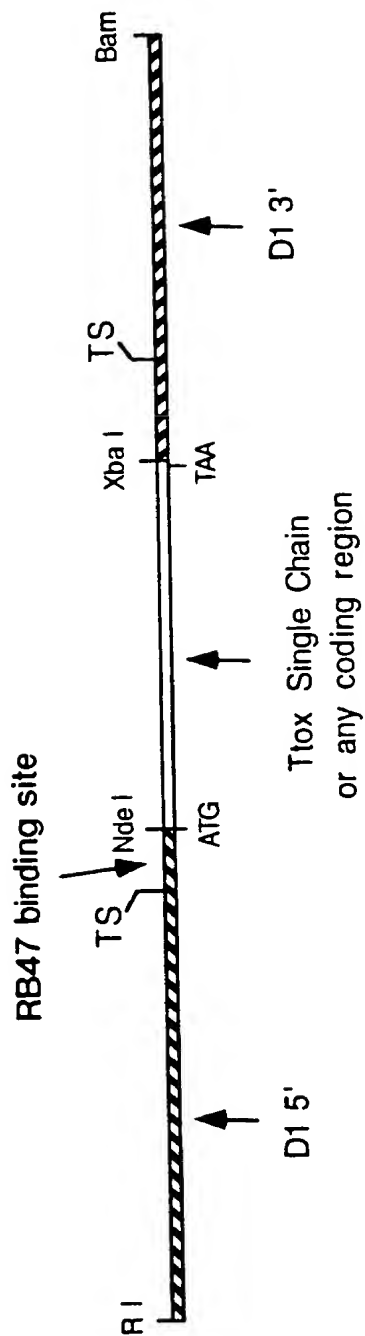


FIG. 7

C. reinhardtii expressed

1.3 soluble

1.3 pellet

12.1 soluble

12.1 pellet

Tet Tox Fab

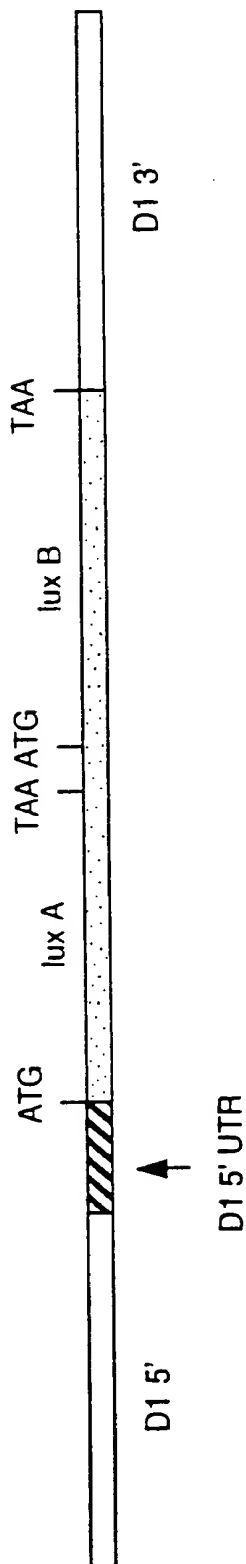
Soluble

~~~~~

← Fab

FIG. 8

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Bacterial luciferase A and B proteins expressed from a single mRNA containing the psbA 5' UTR with translational activator element.

FIG. 9

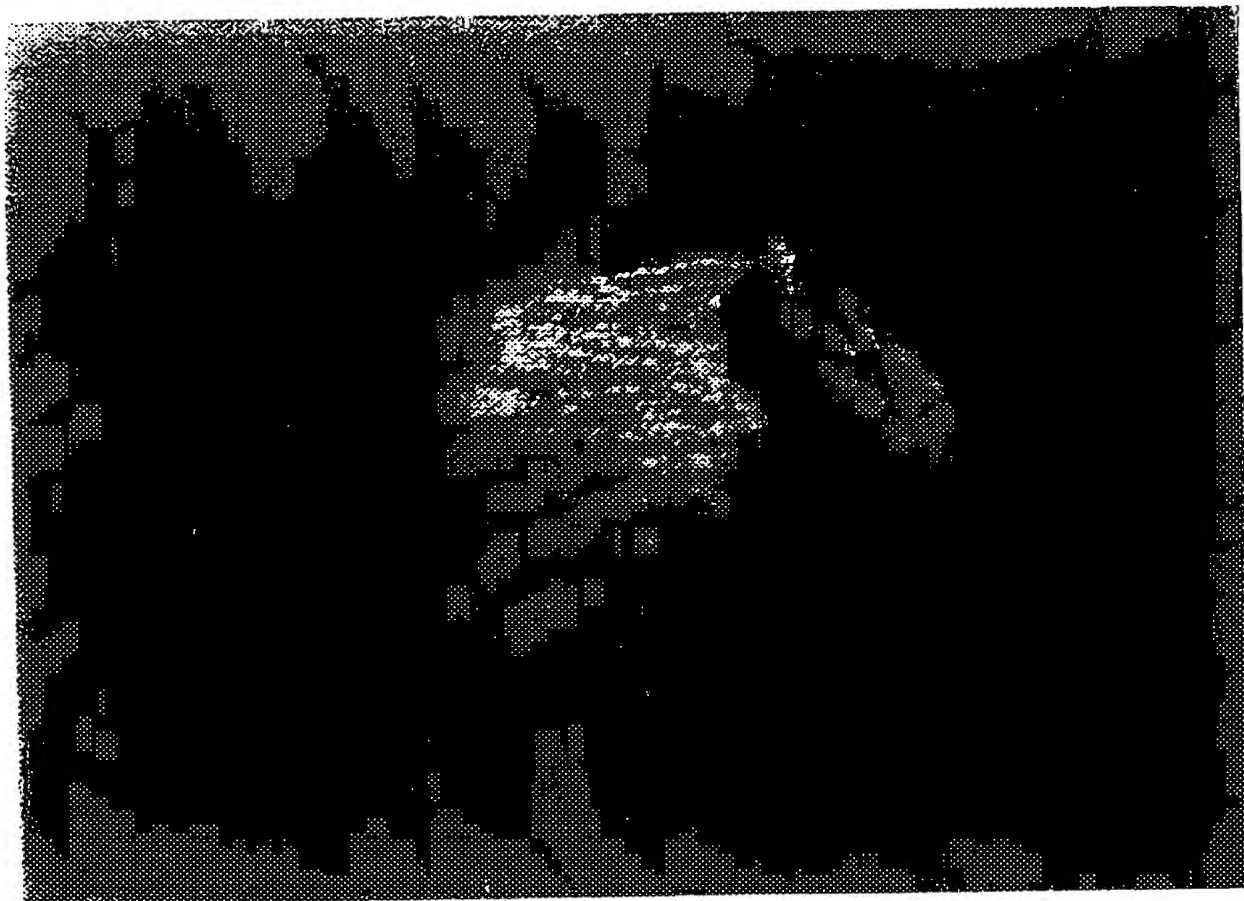


FIG. 10



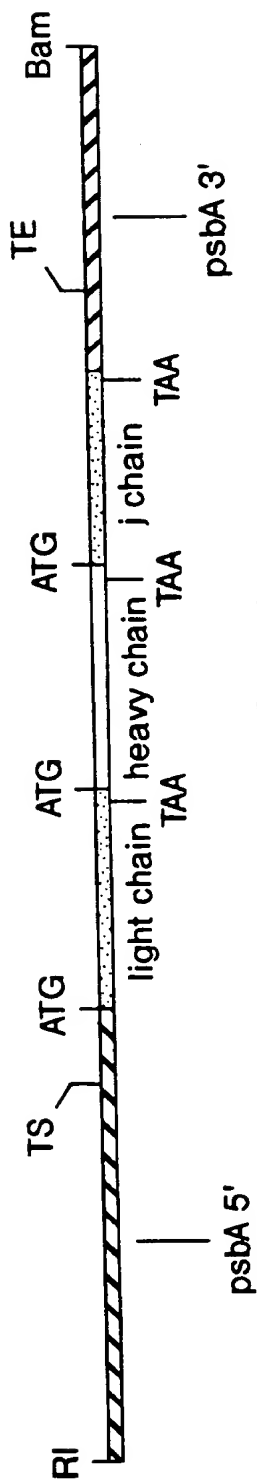


FIG. 11